

## Acoustics topic of upcoming Frontiers in Science series

July 24, 2014



### Tapping sound waves to address energy, national security challenges

LOS ALAMOS, N.M., July 24, 2014—Dipen Sinha of Los Alamos National Laboratory's Materials Synthesis and Integrated Devices group will discuss acoustics and its applications, including how it is possible to use sound to solve problems in health, national security and for industry, in a series of Frontiers in Science Lectures beginning July 29 at Crossroads Bible Church in Los Alamos.

"I take advantage of the nature of sound waves and often manipulate these waves to solve technically challenging problems related to energy and national security," Sinha said. "How an object vibrates also tells a lot about it. Sound can exert force on objects."

By carefully manipulating acoustic forces it is possible to create novel structures and even unique materials that are otherwise not possible with conventional fabrication processes.”

1:08

#### Los Alamos Frontiers in Science Lecture: Science of Sound

People are immersed in a universe filled with sound and experience it daily through hearing and vibration, according to Sinha. Sound is created by vibration and travels as waves through any medium in a number of ways. Observing how these waves interact with any medium can help researchers identify the medium even if it is hidden inside sealed containers, he added.

All Frontiers in Science lectures begin at 7 p.m. at the following locations:

- Tuesday, July 29 at the Crossroads Bible Church, 97 East Road, Los Alamos
- Wednesday, July 30 at the New Mexico Museum of Natural History and Science, 1801 Mountain Road NW, Albuquerque
- Tuesday, Aug. 5 at the James A. Little Theater New Mexico School for the Deaf 1060 Cerrillos Road, Santa Fe.

#### About the speaker

Sinha is currently a Laboratory Fellow and leads the Acoustics and Sensors team at the Laboratory. Sinha joined the Laboratory as a postdoctoral fellow to work in the field of low-temperature physics in 1980. In 1983, he moved to industry before returning to Los Alamos in 1986 as a staff scientist and developed ultra-high speed measurement techniques, femtosecond lasers, thermionic integrated circuits and Langmuir-Blodgett films. Faced with a very challenging technical problem to solve for the United States government, he switched his research career and taught himself acoustics. He developed the Acoustic Resonance Spectroscopy and the Swept Frequency Acoustic Interferometry techniques specifically to solve these problems.

His research explores new ways to “see” the invisible, with applications that include the development of techniques for acoustic noninvasive chemical identification, petroleum monitoring in oil wells, imaging objects with sound and a wide range of sensors and sensing technologies in many areas of science and technology. He has won four R&D100 Awards and holds 33 patents.

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